UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,285	03/16/2004	Vijayalakshmi R. Raveendran	030065	3631

23696 7590 08/28/2008

QUALCOMM INCORPORATED
5775 MOREHOUSE DR.
SAN DIEGO, CA 92121

EXAMINER	
RASHID, DAVID	

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
08/28/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com
kascanla@qualcomm.com
nanm@qualcomm.com

Office Action Summary	Application No.	Applicant(s)	
	10/802,285	RAVEENDRAN ET AL.	
	Examiner	Art Unit	
	DAVID P. RASHID	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-45* is/are rejected.

7)☒ Claim(s) *46-54* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Amendments

[1] This office action is responsive to the *Amendment* received on June 19, 2008. Claims 1-54 remain pending; claims 43-54 new.

Response to Arguments

[2] *Applicant Arguments/Remarks Made in an Amendment* filed June 19, 2008 have been respectfully and fully considered, but not found persuasive.

Summary of Remarks regarding claims 1, 13, 15, 31-32, 34, and 38-39

Applicant argues that Kim does not, however, disclose determining whether the two neighboring blocks are both subdivided and performing deblock filtering on one or more edge pixels of the two neighboring blocks, after determining that at least one of the two neighboring blocks is not subdivided, as required by Applicant's claim 1. In support of the rejection of claim 1, the Office Action merely made a conclusory statement that Kim must have determined that the blocks are not subdivided in order to continue with the deblocking algorithm of FIG. 4, The Office Action, however, provides no evidence that Kim discloses making a determination as to whether the neighboring blocks are subdivided. In fact, such a determination is unnecessary in the Kim reference since the techniques of the Kim reference are applied to fixed size block patterns. (Applicant Resp. at 15, Apr. 19, 2008.)

Additionally, Kim does not require that such a determination be made to perform the deblock filtering described in Kim. Instead, the deblock filtering technique described in Kim makes a deblocking decision based on the degree of blocking in the block and not whether the neighboring blocks are subdivided, as required by Applicant's claim 1. Additionally, the Kim

reference always performs deblock filtering, although the type of deblock filtering performed depends on the degree of blocking artifacts in the block. As such, Kim does not determine whether or not to perform deblock filtering based on whether at least one of the neighboring blocks are subdivided. Applicant's claim 1, however, requires performing deblock filtering only when at least one of the neighboring blocks is not subdivided. (Resp. at 15.)

Accordingly, Applicant argues the 103 rejections should be withdrawn as all secondary references fail to cure the deficiencies of Kim with respect to the independent claims. (Resp. at 16).

Examiner's Response regarding claims 1, 13, 15, 31-32, 34, and 38-39

MPEP § 2111 titled "Claim Interpretation; Broadest Reasonable Interpretation" cites, in relevant part:

> During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." >The Federal Circuit's *en banc* decision in Phillips v. AWH Corp., 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) expressly recognized that the USPTO employs the "broadest reasonable interpretation" standard:
> The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." In re Am. Acad. of Sci. Tech. Ctr., 367 F.3d 1359, 1364[, 70 USPQ2d 1827] (Fed. Cir. 2004)." Indeed, the rules of the PTO require that application claims must "conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description." 37 CFR 1.75(d)(1).

MPEP § 2111.

Applicant's interpretation of "determining" is unpersuasive in light of its broad usage in the claim. *See* Resp. at 15 (arguing that "determining" is only when that to be determined may or may not in fact hold those determinable characteristics, as opposed to always holding those determinable characteristics). "Determination" is "the act of deciding definitely and firmly" or

"the result of such an act of decision". *See* Merrian-Webster Online, 2007-2008, "determination" n. def. 3a, *available at* http://www.m-w.com/dictionary.

For the two blocks in question of *Kim* to even perform deblocking filtering, it must have been "determined" at some point in time beforehand that (i) the blocks are adjacent; and (ii) that they are subdivided. Deblocking filtering requires at least these two requirements, and for the *Kim* algorithm to perform such filtering, there must have been an "act of deciding definitely and firmly" that those two characteristics of the two blocks hold (which are equivalent to the first two method steps of claim 1).

The Examiner believes such a conclusory statement is sufficient. By analogy, a claim reciting "constructing a wheel" would be anticipated by a wheel itself, because the wheel must have been constructed from something for the wheel to even exist (as a wheel is a portion of order from chaos, thus "constructed"). The Examiner suggests further defining what is meant by "determining" the elements in question (*i.e.*, how the method steps "determine", what is being done to "determine", similar to how the wheel was constructed and not just any construction).

[3] *Applicant Arguments/Remarks Made in an Amendment* filed June 19, 2008 have been respectfully and fully considered, and found persuasive.

Summary of Remarks regarding claims 2, 14, 33, 35, and 40

Applicant argues that if a prior art reference fails to disclose any element of a claim, then the rejection under 35 U.S.C. 102(b) is improper. In support of the rejection of claims 2, 14, 33, 35 and 40, the Office Action combined the teachings of two references to arrive at the claimed invention. As such, the rejection of claims 2, 14, 33, 35 and 40 as being anticipated under 35 U.S.C. § 102(b) is improper and should be withdrawn.

Examiner's Response regarding claims 2, 14, 33, 35, and 40

The Applicant has properly pointed out a grammatical error in the rejections regarding claims 2, 14, 33, 35, and 40. The rejections were misplaced under the heading "102(b)", when the rejection of "Kim (US 6,240,135 B1) in view of Thyagarajan et al. (US 6,529,634 B1)" was meant to properly fall under the proceeding heading "103(a)".

Claim Rejections - 35 USC § 101

[4] 35 U.S.C. § 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

[5] **Claims 1-12** and **34-42** are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

A judicial exception claim is a § 101 non-statutory claim for solely embodying an abstract idea, natural phenomenon, or law of nature. *See* MPEP § 2106(IV)(C)(2). However, a practical application of a judicial exception claim is a § 101 statutory claim "when it:

(A) 'transforms' an article or physical object to a different state or thing [(*i.e.*, a physical transformation)]; or

(B) otherwise produces a useful, concrete and tangible result, based on the factors discussed below." *Id.*

The Examiner acknowledges Claim 1 performs the method step of "performing deblocking filtering on one or more edge pixels of the two neighboring blocks. . ." (*emphasis added*) that one may consider a physical transformation (and thus practical application) of the judicial exception, as Applicant finds that "the generation of pixel data that represents an image with an increased visual quality". (Applicant Resp. at 12, Jun. 9, 2008.)

However, the Examiner believes that a pixel is nothing more than a block of existing information as there is nothing tangible or physical about the pixel itself. A pixel is equivalent to a value or number representative of an "image". A pixel is more representative of an information value or number (and a block more representative of an information matrix) than something tangible or physical.

A pixel may be considered an article that is being transformed, but the transformation requires that it be physical. *See* Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility, ANNEX (II)(B)(iii). A physical transformation of an article (*i.e.*, pixel) is not being claimed.

In light of this broad definition of pixels (and even if a "practical application" exists as the Examiner and Applicant both agree, it is just not a practical application of something physical), there is no "(A) transform[ation of] an article or physical object to a different state or thing; or (B) otherwise produc[tion of] a useful, concrete and tangible result." § 2106(IV)(C)(2). *See* Non-Final Rejection, Mar. 20, 2008 (providing an argument for lacking tangibility).

Claim 34 is rejected under an equivalent argument. Claims 2-12 and 35-42 are rejected for failing to cure the deficiency of their dependent.

[6] **Claims 13-21** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The means-plus-function language is supported by software/program enablement which is non-statutory as "the embodiments may be implemented by hardware, software, firmware, middleware, microcode, or any combination thereof. When implemented in software, firmware, middleware or microcode, the items of the embodiment are the program code or code segments to perform the necessary tasks may be stored in a machine

readable medium (not shown). A code segment may represent a procedure, a function, a subprogram, a program, a routine, a subroutine, a module, a software package, a class, or any combination of instructions, data structures, or program statements. . .". (Specification at ¶0054, Mar. 16, 2004; *emphasis added.*) The claim is representative of an embodiment, and the disclosure supports that said embodiment may be implemented by non-statutory function.

Claim Rejections - 35 USC § 102

[7] The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

[8] **Claims 1, 13, 15, 31-32, 34,** and **38-39** are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,240,135 (issued May 29, 2001, *hereinafter* "Kim").

Regarding **claim 1**, *Kim* discloses a method for processing images compressed using block based compression ("block-unit compression method" at 4:12), comprising:

determining whether two blocks are neighboring blocks of pixels (interpretation 1: the 8 x 8 blocks of pixels in fig. 2 must have been determined to be neighboring to continue the fig. 4 algorithm; interpretation 2: the 1 x 1 blocks (pixels) in fig. 2 must have been determined to be neighboring to continue the fig. 4 algorithm);

determining whether the two neighboring blocks are both subdivided (interpretation 1: the 8 x 8 blocks of pixels in fig. 2 must have been determined to not be subdivided to continue the fig. 4 deblocking algorithm; interpretation 2: the 1 x 1 blocks (pixels) in fig. 2 must have been determined to not be subdivided to continue the fig. 4 deblocking algorithm (the algorithm has already determined that pixels cannot be sub-divided)), if it is determined that the two blocks are neighboring blocks; and

performing deblocking filtering (fig. 4, items 411S, 412S) on one or more edge pixels ("S_o" pixels in fig. 2) of the two neighboring blocks, after determining that at least one of the two neighboring blocks is not subdivided (it has already been determined that both of the two neighboring blocks are not subdivided, hence at least one of the two is true also).

Regarding **claim 3**, *Kim* discloses the method of claim 1, wherein determining whether two neighboring blocks are both subdivided comprises:

obtaining a block size assignment values (interpretation 1: the block size assignment information is 8 x 8 already known by the algorithm; interpretation 2: the block size assignment information is 1 x 1 already known by the algorithm); and

using the block size assignment value to determine whether the two neighboring values are subdivided (the algorithm "uses" the block size assignment value to determine whether the two neighboring values are subdivided).

Regarding **claim 13**, claim 1 recites identical features as in claim 13. Thus, references/arguments equivalent to those presented for claim 1 are equally applicable to claim 13. The means-plus-function language is anticipated by the computer needed to perform fig. 4.

Regarding **claim 15**, claim 3 recites identical features as in claim 15. Thus, references/arguments equivalent to those presented for claim 3 are equally applicable to claim 15. The means-plus-function language is anticipated by the computer needed to perform fig. 4.

Regarding **claim 31**, claim 1 recites identical features as in claim 31. Thus, references/arguments equivalent to those presented for claim 1 are equally applicable to claim 31.

Regarding **claim 32**, claim 3 recites identical features as in claim 32. Thus, references/arguments equivalent to those presented for claim 3 are equally applicable to claim 32.

Regarding **claim 34**, claim 1 recites identical features as in claim 34. Thus, references/arguments equivalent to those presented for claim 1 are equally applicable to claim 34.

Regarding **claim 38**, *Kim* discloses the method of claim 34, wherein determining whether two neighboring blocks of pixels from an image are subdivided comprises retrieving block size assignment information associated with a first block of pixels (interpretation 1: the block size assignment information is 8 x 8 already known by the algorithm for the first block of pixels; interpretation 2: the block size assignment information is 1 x 1 already known by the algorithm for the first block of pixels), wherein the block size assignment information indicates how the first block of pixels is subdivided (*i.e.,* being 8 x 8 is an indication of "how" it was subdivided).

Regarding **claim 39**, *Kim* discloses the method of claim 34, further comprising:

when a first block (8 x 8 pixel block in fig. 2) of pixels of the two neighboring blocks of pixels is subdivided (the first block is subdivided in 8 x 8 single pixels), selecting two neighboring sub-blocks of pixels (e.g. V_4 and V_6);

determining whether the two neighboring sub-blocks of pixels are both subdivided (the algorithm determines that the pixels are 1 x 1, and are thus not subdivided); and

performing deblocking filtering (fig. 4, items 411S, 412S) on one or more edge pixels of the two neighboring sub-blocks of pixels, when it is determined that both of the two neighboring sub-blocks of pixels are not subdivided.

Claim Rejections - 35 USC § 103

[9] The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

[10] **Claims 2, 14, 33, 35, 40** and **43-45** are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kim* in view of U.S. Patent No. 6,529,634 (issued Mar. 4, 2003, *hereinafter* "Thyagarajan et al.").

Regarding **claim 2,** while *Kim* discloses the apparatus of claim 1, *Kim* does not teach wherein determining whether two neighboring blocks are both subdivided comprises: obtaining variance values of each of the two neighboring blocks; comparing the variance values to a first threshold; and determining whether the two neighboring blocks are both subdivided based upon the comparison of the variance values to the first threshold.

Thyagarajan et al. teaches a contrast sensitive variance based adaptive block size DCT image compression that teaches wherein determining whether two neighboring blocks are both subdivided comprises:

obtaining variance values of each of the two neighboring blocks (*e.g.* blocks P_{32} and P_{33} of fig. 3b are neighboring);

comparing the variance values ("V4ij" in item 226 of fig. 2) to a first threshold ("T4" in item 226 of fig. 2); and

determining whether the two neighboring blocks are both subdivided based upon the comparison of the variance values to the first threshold (fig. 2, items 224, 226, 228, 230 determines that both blocks are both subdivided based upon the PQR data which was based upon the comparison of the variance values to the first threshold).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the apparatus of *Kim* to determines whether two neighboring blocks are divided based upon variance values of each block as taught by *Thyagarajan et al.* as "[v]ariance based block size assignment offers several advantages. Because the Discrete Cosine Transform is performed after block sizes are determined, efficient computation is achieved. The computationally intensive transform need only be performed on the selected blocks. In addition, the block selection process is efficient, as the variance of pixel values is mathematically simple to calculate. Still another advantage of variance based block size assignment is that it is perceptually based. Pixel variance is a measure of the activity in a block, and provides indication of the presence of edges, textures, etc. It tends to capture the details of a block much better than measures such as the average of pixel values. Thus, the variance based scheme of the present

invention assigns smaller blocks to regions with more edges and larger blocks to the flatter regions. As a result, outstanding quality may be achieved in the reconstructed images.", *Thyagarajan et al.*, 9-25.

Regarding **claim 14**, claim 2 recites identical features as in claim 14. Thus, references/arguments equivalent to those presented for claim 2 are equally applicable to claim 14.

Regarding **claim 33**, while *Kim* discloses the apparatus of claim 31, wherein the processor determines whether two neighboring blocks are divided (refer to references/arguments of claim 1); however, *Kim* does not teach wherein the processor determines whether two neighboring blocks are divided based upon variance values of each block.

Thyagarajan et al. teaches a contrast sensitive variance based adaptive block size DCT image compression that teaches wherein a processor ("compact hardware" in 3:47; fig. 1, items 120, 122, 124)) determines whether two neighboring blocks (*e.g.* blocks P_{32} and P_{33} of fig. 3b are neighboring) are divided based upon variance values of each block (fig. 2, items 224, 226, 228, 230).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the processor of *Kim* to determine whether two neighboring blocks are divided based upon variance values of each block as taught by *Thyagarajan et al.* as "[v]ariance based block size assignment offers several advantages. Because the Discrete Cosine Transform is performed after block sizes are determined, efficient computation is achieved. The computationally intensive transform need only be performed on the selected blocks. In addition, the block selection process is efficient, as the variance of pixel values is mathematically simple

to calculate. Still another advantage of variance based block size assignment is that it is perceptually based. Pixel variance is a measure of the activity in a block, and provides indication of the presence of edges, textures, etc. It tends to capture the details of a block much better than measures such as the average of pixel values. Thus, the variance based scheme of the present invention assigns smaller blocks to regions with more edges and larger blocks to the flatter regions. As a result, outstanding quality may be achieved in the reconstructed images.", *Thyagarajan et al.*, 9-25.

Regarding **claim 35**, while *Kim* discloses the apparatus of claim 34, wherein determining whether two neighboring blocks are subdivided comprises:

determining a size of a first block of pixels of the two neighboring blocks of pixels (interpretation 1: the block size assignment information is 8 x 8 already known by the algorithm for the first block of pixels; interpretation 2: the block size assignment information is 1 x 1 already known by the algorithm for the first block of pixels), *Kim* does not disclose determining a block variance based on pixels of the first block of pixels; and determining that the first block of pixels is subdivided when the block variance exceeds a threshold value associated with the determined size.

Thyagarajan et al. teaches determining a block variance based on pixels of the first block of pixels (2:61-3:10); and determining that the first block of pixels is subdivided when the block variance exceeds a threshold value associated with the determined size (*e.g.*, fig. 2, items 206, 216).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the processor of *Kim* to determine a block variance based on pixels of the first

block of pixels; and determining that the first block of pixels is subdivided when the block variance exceeds a threshold value associated with the determined size as taught by *Thyagarajan et al.* as "[v]ariance based block size assignment offers several advantages. Because the Discrete Cosine Transform is performed after block sizes are determined, efficient computation is achieved. The computationally intensive transform need only be performed on the selected blocks. In addition, the block selection process is efficient, as the variance of pixel values is mathematically simple to calculate. Still another advantage of variance based block size assignment is that it is perceptually based. Pixel variance is a measure of the activity in a block, and provides indication of the presence of edges, textures, etc. It tends to capture the details of a block much better than measures such as the average of pixel values. Thus, the variance based scheme of the present invention assigns smaller blocks to regions with more edges and larger blocks to the flatter regions. As a result, outstanding quality may be achieved in the reconstructed images.", *Thyagarajan et al.*, 9-25.

Regarding **claim 40**, claim 2 recites identical features as in claim 40. Thus, references/arguments equivalent to those presented for claim 2 are equally applicable to claim 40.

Regarding **claim 43**, while *Kim* discloses a machine-readable medium comprising code (2:40-44) that when executed by a processor (the code must have a processor to carry out the algorithm) causes the processor to:

determine whether two blocks are neighboring blocks of pixels (interpretation 1: the 8 x 8 blocks of pixels in fig. 2 must have been determined to be neighboring to continue the fig. 4

algorithm; interpretation 2: the 1 x 1 blocks (pixels) in fig. 2 must have been determined to be neighboring to continue the fig. 4 algorithm);

determine whether the two neighboring blocks are both subdivided (interpretation 1: the 8 x 8 blocks of pixels in fig. 2 must have been determined to not be subdivided to continue the fig. 4 deblocking algorithm; interpretation 2: the 1 x 1 blocks (pixels) in fig. 2 must have been determined to not be subdivided to continue the fig. 4 deblocking algorithm (the algorithm has already determined that pixels cannot be sub-divided)), if it is determined that the two blocks are neighboring blocks; and

perform deblocking filtering (fig. 4, items 411S, 412S) on one or more edge pixels ("S_o" pixels in fig. 2) of the two neighboring blocks, after determining that at least one of the two neighboring blocks is not subdivided (it has already been determined that both of the two neighboring blocks are not subdivided, hence at least one of the two is true also), *Kim* does not teach outputting the filtered block to a display.

Thyagarajan et al. teaches outputting block (fig. 3a) to a display (5:16-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the processor of *Kim* to include outputting the filtered block to a display as taught by *Thyagarajan et al.* "for display" (*Thyagarajan et al.*, 3:20) to allow the user to see and analyze the results.

Regarding **claim 44**, claim 2 recites identical features as in claim 44. Thus, references/arguments equivalent to those presented for claim 2 are equally applicable to claim 44.

Regarding **claim 45**, claim 3 recites identical features as in claim 45. Thus, references/arguments equivalent to those presented for claim 3 are equally applicable to claim 45.

[11] **Claims 41-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Kim* view of U.S. Patent No. 6,188,799 (issued Feb. 13, 2001, *hereinafter* "Tan et al.").

Regarding **claim 41**, while *Kim* disclose the method of claim 34, *Kim* does not teach obtaining one or more difference values of one or more edge pixels of the two neighboring blocks of pixels; determining a number of the one-or more difference values that exceed a threshold value; and selecting a deblocking filter based on the number.

Tan et al. teaches a method for removing noise in still and moving pictures (fig. 3, item 7) that teaches

obtaining one or more difference values ("deviation c1 and c2" in item 55, fig. 10 and difference value in item 54, fig. 6 that involves difference values between one or more corresponding edge pixels) of one or more edge pixels (fig. 7) of the two neighboring blocks of pixels ("Group 1" and "Group 2" in fig. 7);

determining a number of the one-or more difference values that exceed a threshold value (fig. 6, items 57, 59) ; and

selecting a deblocking filter based on the number (fig. 6, items 58, 60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of *Kim* to include obtaining one or more difference values of one or more edge pixels of the two neighboring blocks of pixels; determining a number of the one-or more difference values that exceed a threshold value; and selecting a deblocking filter based on

the number as taught by *Tan et al.* because "…the novelty of this invention is the use of this particular deblocking filter in the prediction loop to prevent the propagation of blocky artifacts.", *Tan et al.*, 2:33-34.

Regarding **claim 42**, while *Kim* in view and *Tan et al.* disclose the method of claim 42, *Kim* in view and *Tan et al.* do not teach wherein selecting the deblocking filter comprises: selecting a first deblocking filter when the number is equal to 1; and selecting a second deblocking filter when the number is greater than 1.

Tan et al. teaches a method for removing noise in still and moving pictures (fig. 3, item 7) that teaches selecting the deblocking filter comprises:

selecting a first deblocking filter (fig. 6, item 58) when the number is equal to 1; and

selecting a second deblocking filter (fig. 6, item 60) when the number is greater than 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of *Kim* in view and *Tan et al.* to include wherein selecting the deblocking filter comprises: selecting a first deblocking filter when the number is equal to 1; and selecting a second deblocking filter when the number is greater than 1 as taught by *Tan et al.* because "…the novelty of this invention is the use of this particular deblocking filter in the prediction loop to prevent the propagation of blocky artifacts.", *Tan et al.*, 2:33-34.

[12] **Claim 36** is rejected under 35 U.S.C. 103(a) as being unpatentable over *Kim* in view of *Tan et al.* and U.S. Pub. No. 2003/0235250 (filed Jun. 24, 2000, *hereinafter* "Varma et al.").

Regarding **claim 36**, while *Kim* disclose the method of claim 34, *Kim* does not teach determining one or more difference values between one or more corresponding edge pixels of the two neighboring blocks of pixels; when one of the one or more difference values exceeds a

threshold value, filtering the edge pixels using an averaging filter; and when two or more of the one or more difference values exceeds the threshold value, filtering the edge pixels using a Gaussian filter.

Tan et al teaches a method for removing noise in still and moving pictures (fig. 3, item 7) that teaches

determining one or more difference values ("deviation c1 and c2" in item 55, fig. 10 and difference value in item 54, fig. 6 that involves difference values between one or more corresponding edge pixels) between one or more corresponding edge pixels (fig. 7) of the two neighboring blocks of pixels ("Group 1" and "Group 2" in fig. 7);

when one of the one or more difference values exceeds a threshold value (fig. 6, item 57), filtering the edge pixels (fig. 6, item 58) using an averaging filter (fig. 9); and

when two or more of the one or more difference values exceeds the threshold value (fig. 6, items 57, 59), filtering the edge pixels (fig. 6, item 60) using a filter (fig. 9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of *Kim* to include determining one or more difference values between one or more corresponding edge pixels of the two neighboring blocks of pixels; when one of the one or more difference values exceeds a threshold value, filtering the edge pixels using an averaging filter; and when two or more of the one or more difference values exceeds the threshold value, filtering the edge pixels using a filter as taught by *Tan et al* because "…the novelty of this invention is the use of this particular deblocking filter in the prediction loop to prevent the propagation of blocky artifacts.", *Tan et al*, 2:33-34.

Varma et al. teaches video deblocking that uses a Gaussian filter (¶0005).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the filter of *Kim* in view of *Tan et al* to include a Gaussian filter as taught by *Varma et al.* as "…these actions may be accomplished using a spatio-temporally varying filter.", *Varma et al.*, ¶0005 in reference to the objectives listed in ¶0005.

Allowable Subject Matter

[13] **Claims 46-54** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

[14] **Claims 4-12, 16-21,** and **37** would be allowable if rewritten to overcome the rejections under 35 U.S.C. 101, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

[15] Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID P. RASHID whose telephone number is (571)270-1578. The examiner can normally be reached Monday - Friday 7:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-74155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
Examiner, Art Unit 2624

David P Rashid
Examiner
Art Unit 26244

/Vikkram Bali/

Supervisory Patent Examiner, Art Unit 2624